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SENATE

REPORT
100-544

DEPARTMENT OF ENERGY NATIONAL LABORATORY COOPERATIVE RESEARCH INITIATIVES ACT

SEPTEMBER 23 (legislative day, SEPTEMBER 7), 1988.—Ordered to be printed

Mr. JOHNSTON, from the Committee on Energy and Natural Resources, submitted the following

REPORT

[To accompany S. 1480]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 1480) to improve the integration of universities and private industry into the National Laboratory System of the Department of Energy in order to speed the development of technology in areas of significant economic potential, having considered the same, reports favorably thereon with an amendment and recommends that the bill, as amended, do pass.

The amendment is as follows:

Strike out all after the enacting clause and insert in lieu thereof the following:

That this Act may be cited as the "Department of Energy National Laboratory Cooperative Research Initiatives Act".

SEC. 2. DEFINITIONS.

For purposes of this Act, the term—

(a) "National Laboratory" means the following Department of Energy laboratories—

(1) Lawrence-Livermore National Laboratory;
(2) Lawrence-Berkeley National Laboratory;
(3) Los Alamos National Laboratory;
(4) Sandia National Laboratory;
(5) Fermi National Accelerator;
(6) Princeton Plasma Physics Laboratory;
(7) Idaho National Engineering Laboratory;
(8) Argonne National Laboratory;
(9) Brookhaven National Laboratory;
(10) Oak Ridge National Laboratory;
(11) Pacific Northwest Laboratory;
(12) Ames Laboratory;
(13) Stanford Linear Accelerator Center;

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(14) Bates Linear Accelerator Facility;
(15) Center for Energy and Environment Research;
(16) Coal Fired Flow Facility;
(17) Energy Technology Engineering Center;
(18) Hanford Engineering Development Laboratory;
(19) Inhalation Toxicology Research Institute;
(20) Laboratory for Energy-Related Health Research;
(21) Laboratory of Biomedical and Environmental Sciences;
(22) Laboratory of Radiobiology and Environmental Health;
(23) Michigan State University-DOE Plant Research Laboratory;
(24) Notre Dame Radiation Laboratory;
(25) Oak Ridge Associated Universities;
(26) Radiobiology Laboratory;
(27) Savannah River Ecology Laboratory;
(28) Savannah River Laboratory;
(29) Solar Energy Research Institute; and
(30) Stanford Synchrotron Radiation Laboratory.

Such term also includes any future government-owned, contractor-operated laboratory facilities established as Department of Energy Multi-Program Laboratories or Program-Dedicated Facilities. Such term does not include Naval Nuclear Propulsion Reactor Laboratories, or their contractors or subcontractors performing work covered under Executive Order 12344, as codified in section 7158 of title 4, United States Code.

(b) "Secretary" means the Secretary of Energy.

(c) "Federal Agency" means any executive agency as defined in section 105 of title 5, United States Code, and the military departments defined by section 102 of title 5, United States Code.

(d) "contract" means any contract, grant, or cooperative agreement as those terms are used in sections 6303, 6304, and 6305 of title 31, United Stated Code, entered into between any Federal agency and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a contract.

(e) "cooperative research and development agreement" means any agreement between one or more National Laboratories and one or more non-Federal parties under which the Government, through its National Laboratories, provides personnel, services, facilities, equipment, or other resources with or without reimbursement (but not funds to non-Federal parties) and the non-Federal parties provide funds, personnel, services, facilities, and equipment, or other resources toward the conduct of specified research and development efforts which are consistent with the missions of the National Laboratory; except that such term does not include a procurement contract or cooperative agreement as those terms are used in sections 6303, 6304, and 6305 of title 31, United States Code.

(f) "funding agreement" means any contract, grant, or cooperative agreement entered into between the Secretary of Energy and a contractor operating a National Laboratory of the Department of Energy that provides for such contractor to perform research and development at such National Laboratory.

SEC. 3. POLICY.

(a) It is a mission of the National Laboratories to foster, consistent with the national security and a fair return on the taxpayers' investment, the commercialization of technology developed in connection with activities of such Laboratories authorized under title I and other law.

(b) The Secretary shall take such actions as he finds appropriate and consistent with law to further the mission set forth in subsection (a).

TITLE I—THE DEPARTMENT OF ENERGY NATIONAL LABORATORIES CENTERS FOR RESEARCH ON ENABLING TECHNOLOGIES FOR HIGH TEMPERATURE SUPERCONDUCTING APPLICATIONS

SEC. 101. FINDINGS.

For purposes of this title, Congress finds that:

(1) the Department of Energy has conducted extensive research in superconducting materials to support its programmatic activities in High Energy Physics, Magnetic Fusion Energy, Energy Storage Systems, Electric Energy Systems, and Energy Conservation, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93–577), the Energy Reorganization

Act of 1974 (P.L. 93-483), and the Department of Energy Organization Act (P.L. 95-91);

(2) recent developments in high-temperature superconducting materials hold great promise for highly efficient energy storage and transmission, medical diagnostics, magnets for physics research and fusion reactors, and smaller supercomputers;

(3) the United States is a world leader in basic research on high-temperature superconducting materials, and programs supporting this research at the Department of Defense, the National Science Foundation, and the Department of Energy should be maintained and strengthened;

(4) internationl interest in the commercialization of high-temperature superconducting materials is high and the key to success in commercialization lies in the rapid development of these materials and the identification of their applications; and

(5) the National Laboratories have demonstrated expertise in high-temperature superconductivity research and proven record in research in enabling technologies which can benefit industrial efforts in product development.

SEC. 102. PURPOSE.

The purposes of this title are—

(1) to provide for research on critical enabling technologies to assist United States industry in the commercialization of high-temperature superconductors;

(2) to provide national organization and coordination in the research, development and commercialization of high-temperature superconductors; and

(3) to encourage private industry, university, and National Laboratory interaction through centers for research on enabling technologies for high-temperature superconductivity at the National Laboratories.

SEC. 103. ESTABLISHMENT OF THE SUPERCONDUCTOR HIGH-TEMPERATURE RESEARCH INITIATIVE.

The Secretary of Energy shall initiate and carry out a cooperative program of research on enabling high-temperature superconductor technology and on the practical applications of such technology (hereafter in this title referred to as the "Initiative").

SEC. 104. PARTICIPATION OF NATIONAL LABORATORIES

(a) MISSION OF NATIONAL LABORATORIES.—The Secretary shall ensure that the National Laboratories participate in the Initiative, to the extent that such participation does not detract from the primary mission of any participating National Laboratory.

(b) AGREEMENTS.—The Secretary shall enter into such agreements with other Federal agencies, with U.S. private industrial or research organizations, or consortia, or with any college or university, as may be necessary to provide for the active participation of the National Laboratories in the Initiative.

(c) REQUIRED PROVISIONS.—The Initiative shall include provisions for one or more National Laboratories to conduct research and development activities relating to research on high-temperature superconductivity. Such activities may include research and development in associated technologies including thin film and bulk ceramic synthesis and processing and the characterization of physical, chemical, and structural properties in materials.

SEC. 105. FORMATION OF COUNCIL AND CENTERS FOR RESEARCH ON ENABLING TECHNOLOGIES.

(a) COUNCIL.—The Secretary of Energy shall form the "Council for Research on Enabling Technologies" (hereafter in this title referred to as the "Council") that shall be composed or representatives of appropriate government agencies, universities, and industry to provide advice to the Secretary in setting goals and strategies for the Initiative. The Council shall recommend guidelines for the release of the technical findings and developments made by the cooperative research centers established pursuant to subsection (b). Guidelines for releasing technical findings set forth by the Council shall be consistent with guidelines set forth by affected Federal agencies.

(b) COOPERATIVE RESEARCH CENTERS.—(1) The Secretary shall establish cooperative research centers in enabling technology for high-temperature superconducting materials and applications (hereafter in this title referred to as "Centers") at one or more National Laboratories with appropriate university and private industry participants.

(2) The Centers shall be located at National Laboratories that demonstrate expertise in—

(A) high-temperature superconductivity research; and

(B) research in associated technologies including—

(i) thin film and bulk ceramic synthesis and processing; and

(ii) characterization of physical, chemical, and structural properties in materials.

(c) AVOIDANCE OF DUPLICATION.—The Council shall keep appraised of activities taking place at the existing Research Centers on Superconductivity and Superconductivity Pilot Centers. In carrying out the responsibilities of subsection (a), the Council shall recommend to the Secretary and such centers measures to ensure that unnecessarily duplicative research or activities are not being carried out at these Centers.

SEC. 106. PERSONNEL EXCHANGES.

The Initiative may include provisions for temporary exchanges of personnel between any domestic firm or university referred to in this title and the National Laboratories that are participating in the Initiative. The exchange of personnel may be subject to such restrictions, limitations, terms and conditions as the Secretary considers necessary in the interest of national security.

SEC. 107. OTHER DEPARTMENT OF ENERGY RESOURCES.

(a) AVAILABILITY OF RESOURCES.—The Secretary shall make available to other departments or agencies of the Federal Government, and to any participant in research and development projects under the Initiative, any facilities, personnel, equipment, services, and other resources of the Department of Energy for the purpose of conducting research and development projects under the Initiative.

(b) REIMBURSEMENT.—The Secretary may make facilities available under this section only to the extent that the cost of the use of such facilities is reimbursed by the user.

SEC. 108. BUDGETING FOR HIGH-TEMPERATURE SUPERCONDUCTIVITY RESEARCH.

To the extent the Secretary considers appropriate and necessary, the Secretary, in preparing the research and development budget of the Department of Energy to be included in the annual budget submitted to the Congress by the President for fiscal years 1990, 1991, 1992, 1993, 1994, and 1995 under section 1105(a) of title 31, United States Code, shall provide for programs, projects, and activities that encourage the development of new technology in the field of high-temperature superconductivity.

SEC. 109. COST-SHARING AGREEMENTS.

(a) PERMITTED PROVISIONS.—The Secretary shall ensure that contracts for the operation of National Laboratories provide the director of each National Laboratory that is participating in the Initiative or the contractor operating any such National Laboratory the authority to receive funds under any cooperative research and development agreement entered into with a domestic firm or university under the Initiative.

(b) CONSIDERATIONS.—The director of each National Laboratory that is participating in the Initiative, in determining the type and extent of its laboratory participation in carrying out work for others, shall undertake such work only when facilities are available and when it would not interfere with Department of Energy programs, and such work shall be conducted in such a way as to not create a future detrimental burden on the National Laboratory.

(c) LIMITATIONS.—(1) An amount equal to not more than 10 percent of any National Laboratory's annual budget may be received from non-appropriated funds derived from work for other contracts entered into under the Initiative in any fiscal year, except to the extent approved in advance by the Secretary.

(2) Under subsection (a) no National Laboratory may receive from any person more than $10,000,000 of non-appropriated funds under any cooperative research and development agreement entered into under the Initiative, except to the extent approved in advance by the Secretary.

SEC. 110. OVERSIGHT OF COOPERATIVE AGREEMENTS RELATING TO THE INITIATIVE.

(a) PROVISIONS RELATING TO DISAPPROVAL AND MODIFICATION OF AGREEMENTS.—(1) The Secretary may review a cooperative research and development agreement for the purpose of disapproving or requiring the modification of the cooperative research and development agreement. If the Secretary notifies the parties to the agreement of his intent to review the agreement, the agreement shall provide a 30-day period within which the agreement may be disapproved or modified beginning on the date the agreement is submitted to the Secretary.

(2) In any case in which the Secretary disapproves or requires the modification of any agreement presented under this section, the Secretary shall transmit a written

explanation of such disapproval or modification to the head of the National Laboratory concerned.

(b) RECORD OF AGREEMENTS.—Each National Laboratory shall maintain a record of all agreements entered into under this title section and submit such record to the Secretary on an annual basis.

SEC. 111. AVOIDANCE OF DUPLICATION.

In carrying out the Initiative, the Secretary shall ensure that unnecessarily duplicative research is not performed at the research facilities of the Department of Energy (including the National Laboratories) that are participating in the Initiative.

SEC. 112. INTERNAL REVENUE CODE TREATMENT.

(a) TAX EXEMPTIONS.—Any cooperative agreement, association, or consortium established by the Secretary or the National Laboratories is consistent with the purposes of this title shall be treated as an organization described in section 501(c)(3) of the Internal Revenue Code of 1986 and shall be exempt from tax under section 501(a) of such Code with respect to activities under this title.

(b) BASIC RESEARCH PAYMENTS.—Any amounts transferred to an organization described in paragraph (a) by a participating member of such an organization shall be taken into account as basic research payments for purposes of section 41(a)(2) of such Code.

(c) CAPITAL GAINS TREATMENT.—(1) No gain or loss shall be recognized in connection with the transfer pursuant to this title of any patent, copyright, trademark, trade secret, mask work, or other intellectual property by or between an organization described in subsection (a) and any participating member of such an organization.

(2) If property is received in a transfer described in paragraph (1), the basis of the property in the hands of the transferee shall be the same as it would be in the hands of the transferror.

SEC. 113. ANTITRUST TREATMENT.

Any cooperative agreement, association, or consortia related by the Secretary or the National Laboratories under this title, shall be considered a joint research and development venture within the meaning of section 2(a)(6) of the National Cooperative Research Act of 1984 (15 U.S.C. 4301 et seq.), for purposes of such Act.

TITLE II—TECHNOLOGY MANAGEMENT AT THE DEPARTMENT OF ENERGY NATIONAL LABORATORIES

SEC. 201. FINDINGS AND PURPOSE.

(a) FINDINGS.—For purposes of this title, Congress finds that—

(1) private industry has great interest in scientific collaboration with the National Laboratories but only if the present Department of Energy's present laboratory contracting process can be streamlined and intellectual property associated with joint ventures, adequately protected;

(2) contracts for the operation of the National Laboratories must provide the directors of such Laboratories with sufficient management authority for intellectual property to ensure that the director can negotiate with industry to set up cooperative research and development agreements.

(3) the authority provided to the directors of the National Laboratories should be subject to periodic audit and oversight by the Secretary, the Inspector General and the Comptroller General as well as Congress.

(4) there should be timely consistent review procedure to ensure that commercialization potential is considered when software is developed under a Department of Energy contract or may have involved some Department of Energy funding;

(5) the National Laboratories must be perceived as "user-friendly" in order for industry to seriously consider the laboratories partners for collaborative research and development ventures;

(6) the National Laboratories must aggressively seek contact with private industries to ensure that they recognize the technical and scientific expertise resident in these laboratories, in addition to publicizing the availability of user facilities and technological projects in progress;

(7) the National Laboratories have demonstrated successes in technology transfer into the private sector but the effort can be significantly enhanced if—

(A) industry becomes more aware of the National Laboratory research and development projects and capabilities;

(B) technology transfer is considered a significant part of the National Laboratories' mission;

(C) the National Laboratories become better educated in industry market requirements; and

(D) industry gets involved with the National Laboratories early enough in the research and development process to direct development of commercially viable products; and

(8) nuclear weapons design, development, production, and maintenance comprise the primary mission of the Department of Energy nuclear weapons complex.

(b) PURPOSE.—The purpose of this title is to better meet the continuing responsibility of the Federal Government to ensure the full use of the results of the Nation's Federal investment in the National Laboratories' research and development in meeting international competition.

SEC. 202. DUTIES AND AUTHORITIES OF THE SECRETARY.

(a)(1) The Secretary shall review all existing regulations, policy guidelines, orders, directives, procedures, and administrative processes associated with the National Laboratories directors' ability to:

(A) enter into cooperative relationships and cooperative research and development agreements with private industry or universities;

(B) undertake work-for-others; and

(C) operate user facilities.

(2) The Secretary shall review existing standards for resolving potential conflicts of interests to ensure that such standards adequately establish guidelines for situations likely to arise through the use of the authorities granted in this Act, including but not limited to cases where present or former National Laboratory employees or their partners negotiate licenses or assignments of titles to inventions or negotiate cooperative research and development agreements with Federal agencies (including the Department of Energy or the contractor-operator with which the employee involved is or was formerly employed).

(b) The Secretary shall—

(1) review the impact of the exchange of scientific information, scientific innovation, and commercialization resulting from cooperative research and development agreements.

(2) survey non-federal parties interested in entering into cooperative research and development agreements with the National Laboratories to determine if adequate measures exist to encourage scientific innovation and commercialization resulting from cooperative research and development agreements; and

(3) based on the results of such review and survey develop policy recommendations that shall be submitted to the Congress.

(c) The Secretary shall—

(1) formulate and carry out a comprehensive set of policy guidelines to advance the goals of this Act, based on the review under subsection (a);

(2) report to Congress and the President within 90 days after the date of the enactment of this Act on the status of this review; and

(3) within 180 days after the date of the enactment of this Act, implement the policy guidelines under paragraph (1) that do not require regulations under section 212.

SEC. 203. POLICY.

It is the policy of Congress that—

(a) intellectual property rights in technology developed at the National Laboratories be managed so as to promote the competitiveness of United States industries;

(b) the Secretary prescribe regulations for cooperative research and development agreements and intellectual property rights arising under such agreements; and

(c) the directors of the National Laboratories devise implementing procedures consistent with the policy guidelines set forth by the Secretary.

SEC. 204. DEFINITIONS.

(a) For purposes of this title, the term—

(1) "collaborative party" means a party to a cooperative research and development agreement as defined in Section 2(e);

(2) "computer software" means recorded information, regardless of form or the media on which it may be recorded, comprising computer programs or documentation thereof;

(3) "director of a National Laboratory" means the Department of Energy contractor operator's employee who directs the management and operation of such National Laboratory;

(4) "intellectual property" means patents, trademarks, copyrights, mask works, and other forms of comparable property rights;

(5) "invention" means any invention that is or may be patentable or otherwise protected under Title 35, United States Code, or any novel variety of plant that is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.);

(6) "laboratory manager or operator" means the contractor who has signed a management and operating contract with the Secretary (but only with respect to activities relating to such management or operation);

(7) "laboratory owned" means any rights in intellectual property conveyed under this title to a contractor operating a National Laboratory or any rights in intellectual property arising under the operating contract for a National Laboratory where rights are not expressly taken by the United States Government or by a subcontractor;

(8) "made" when used in conjunction with any invention means the conception or first actual reduction to practice of such invention;

(9) "subject invention" means any invention of a National Laboratory first conceived or reduced to practice in the performance of work under a contract or funding agreement for the operation of a National Laboratory;

(10) "technical data" means recorded information of a scientific or technical nature regardless of form or the media on which it may be recorded;

(11) the term "third parties" means domestic entities located in the United States who agree to manufacture and to conduct research, and development substantially in the United States including—

(A) Federal agencies other than the Department of Energy;

(B) units of State or local government;

(C) industrial organizations, such as corporations, partnerships, limited partnerships, consortia, or industrial development organizations;

(D) public and private foundations;

(E) nonprofit organizations such as universities; and

(F) licensees of inventions, technical data, or computer software owned by the laboratory manager or operator.

SEC. 205. COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS.

(a) GENERAL AUTHORITY.—The Secretary shall prescribe regulations ensuring that the contract for the operation of any National Laboratory authorizes the director of such Laboratory:

(1) to enter into cooperative research and development agreements and to negotiate the terms and conditions of such agreements with—

(A) other federal agencies;

(B) units of state or local government;

(C) industrial organizations including corporations, partnerships, and limited partnerships, consortia, and industrial development organizations;

(D) public and private foundations;

(E) nonprofit organizations including universities; or

(F) other persons including licensees of inventions, technical data or computer software owned by the National Laboratory.

(2) to negotiate intellectual property licensing agreements for National Laboratory owned inventions, technical data or computer software, assigned or licensed to the National Laboratory by third parties including voluntary assignment by employees.

(b) SPECIFIC AUTHORITY.—Each director of a National Laboratory may negotiate and include provisions in any cooperative research and development agreement entered into pursuant to this section permitting the laboratory manager or operator, on behalf of the United States to—

(1) accept, retain, and use funds, personnel, services, and property from collaborative parties and provide personnel, services, and property to collaborating parties;

(2) grant or agree to grant in advance to a collaborative party, intellectual property licenses or assignments, or options thereto, in any invention, technical data or computer software, made in whole or in part by an employee or a laboratory manager or operator under the cooperative research and development agreement; and

(3) to the extent consistent with Department of Energy regulations, orders, and directives pertaining to conflict of interest, permit employees or former employees of a laboratory manager or operator to participate in efforts to transfer to the private sector inventions, technical data or computer software, such employees developed or made while in the service of such laboratory manager or operator.

(c) In determining whether to enter into a cooperative research and development agreement the director of a National Laboratory shall determine that—

(1) facilities at the National Laboratory are available to do the work that is the subject of the cooperative research and development agreement;

(2) the work that is the subject of the cooperative research and development agreement would not interfere with Department of Energy programs;

(3) the work that is the subject of the cooperative research and development agreement would not create a future detrimental burden on the National Laboratory; and

(4) the proposed cooperative research and development agreement is consistent with applicable guidelines of the Secretary for cooperative research and development agreements.

(d) APPROVAL OF AGREEMENT BY SECRETARY.—The Secretary may disapprove or require the modification of an agreement under subsection (a). Such agreement shall provide a 30-day period beginning on the date the agreement is presented to the Secretary by the director of the National Laboratory concerned, within which period such action may be taken by the Secretary. In any case in which the Secretary disapproves or requires the modification of any cooperative agreement presented under this section, the Secretary shall transmit a written explanation of such disapproval or modification to the director of the National Laboratory concerned. If such action is not taken within this thirty day period, the cooperative research and development agreement shall be deemed approved.

(e) LIMIT ON PERCENTAGE OF THE TOTAL WORK COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS CAN COMPRISE AT THE NATIONAL LABORATORIES.—The cumulative total of non-appropriated funds received in any year under all agreements entered into by the director of any National Laboratory under this title shall not exceed an amount equal to 10 percent of the annual budget of such National Laboratory.

(f) RECORDS OF AGREEMENTS.—Each National Laboratory shall maintain a record of all agreements entered into under this title, and shall submit it to the Secretary on annual basis.

SEC. 206. AGREEMENT CONSIDERATIONS.

In deciding which cooperative research and development agreements to enter into, the director of a National Laboratory shall:

(a) give special consideration to small business firms and consortia involving small business firms;

(b) give preference to business units located in the United States that agree that products embodying inventions, technical data or computer software, made under the cooperative research and development agreement or produced through the use of such inventions, technical data or computer software, will be developed and manufactured substantially in the United States;

(c) in the case of any industrial organizations or other person subject to the control of a foreign company or government, as appropriate, take into consideration whether or not such foreign government permits United States agencies, organizations, or other persons to enter into cooperative research and development agreements and licensing agreements; and

(d) provide universities the opportunity to participate in such cooperative agreements when such participation will contribute to the purpose of this title.

SEC. 207. PATENT OWNERSHIP AND THE CONDITIONS OF OWNERSHIP.

(a) DISPOSAL OF TITLE TO INVENTIONS.—Notwithstanding section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182), section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5908), or other provision of law, the Secretary shall dispose of the title to any subject invention made in the performance of a Department of Energy contract to operate any National Laboratory in the same manner as applied to small business and nonprofit organizations under Chapter 18 of title 35, United States Code.

(b) RETENTION OF TITLE BY UNITED STATES.—(1) Whenever a manager or operator of a National Laboratory under a contract makes a subject invention to which the Secretary has determined (at the time of contracting for the management and operation of the National Laboratory) to retain title for exceptional circumstances under

section 202(a)(ii) of title 35, United States Code, the title to the subject invention shall be retained by the Government unless the National Laboratory at which the invention is made requests title to such invention and the Secretary does not notify the director of the National Laboratory within 90 days after receipt of such request that the invention—

(A) is covered by a determination under such section 202(a)(ii); or

(B) has been classified or has been designated sensitive technical information as authorized by Federal statutes.

(2) Whenever a manager or operator of a National Laboratory under a contract makes a subject invention to which the Secretary has determined (at the time of contracting for the management and operation of the National Laboratory) to retain title because the invention is made in the course of or under a funding agreement described in section 202(a)(iv) of title 35, United States Code, the title to the subject invention shall be retained by the Government unless the National Laboratory at which the invention is made requests title to such invention and the Secretary does not notify the director of the National Laboratory within 90 days after receipt of such request that the invention—

(A) has been classified or has been designated sensitive technical information as authorized by Federal statutes; and

(B) is covered by a determination under such subsection 202(a)(iv).

(3) The Secretary may not use export control statues or regulations as the sole basis for refusing a request for title to a subject invention.

(4) If the Secretary does not notify a National Laboratory that has requested title to a subject invention in accordance with this section, such Laboratory shall be deemed to have elected title to the invention under the Government-wide contractor patentable ownership provisions of Chapter 18 of title 35, United States Code.

SEC. 208. SPECIAL RULE FOR WAIVER OF GOVERNMENT LICENSE RIGHTS.

Any of the rights of the Government or obligations of a National Laboratory described in chapter 18 of title 35, United States Code, including the license reserved in section 202(c)(4) of title 35, United States Code, may be waived or omitted if the Secretary determines that the interests of the United States and the general public will be better served or the objectives and policies of this title will be better promoted by such wavier or omission. A waiver or omission shall be considered—

(1) if it is necessary to obtain a uniquely or highly qualified contractor; or

(2) if such waiver or omission relates to a subject invention involving cosponsored, cost sharing or joint venture research and development, and the contractor, cosponsor or joint venturer is making substantial contribution of funds, facilities or equipment to the work performed on such invention; or

(3) if the subject invention will require substantial additional investment in development before a product is created and it is expected that the primary market for such product is the United States Government.

SEC. 209. INTELLECTUAL PROPERTY CONTRACT PROVISIONS.

(a) CONTRACT PROVISIONS.—Any Department of Energy funding agreement to operate a National Laboratory shall provide—

(1) that any royalties or income that is earned by the manager or operator of a National Laboratory from the licensing of laboratory-owned intellectual property rights in any fiscal year shall be used as authorized under subsection 202(c)(7)(E) of title 35, United States Code and Section 13(a)(1)(B)(i)–(iv) and section 13(a)(2)–(4) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710c(a)(1)(B)(i)–(iv) and 3710c(a)(2)–(4); and

(2) that the costs of obtaining and protecting intellectual property rights in any invention, technical data or computer software, owned by the National Laboratory shall be paid for by such National Laboratory as a cost shared expense under a cooperative research and development agreement.

(b) The Secretary shall establish procedures to have the management of intellectual property rights, including procurement and retention of such rights as well as licensing of such rights, in connection with laboratory-owned inventions, commercially valuable technical data and computer software shall be the responsibility of the director of the National Laboratory at which the invention, technical data, or computer software are made, developed or assigned.

(c) The Secretary shall prescribe regulations, orders, or directives prohibiting any manager or operator of a National Laboratory who has received title to intellectual property under this section from receiving money or other benefit from the use or licensing of such property for the benefit of the laboratory manager or operator, except for research and development associated with activities at the National Laboratory to promote technology transfer as authorized by law, or in special circum-

stances, as may be approved by the appropriate Department of Energy manager of the Operations Office.

(d) COMPENSATION.—(1) Subject to paragraph (2), in return for retaining title to any intellectual property rights in any invention or discovery made in performance of a Department of Energy cooperative research agreement, the manager or operator of any National Laboratory contractor shall pay to the United States reasonable compensation based on the value of the technology transferred. The amount of the payment arising as a result of the transfer shall be set by an arbitration board consisting of one member selected by the contractor, one member selected by the Secretary, and one member jointly selected by the contractor and the Secretary. In determining the payment, the arbitration boards shall set an amount that is proportionate with the research and development costs funded by the United States. The arbitration board shall have discretion to permit the payment to be made in installments according to the extent the contractor uses or employs the intellectual property.

(2) Paragraph (1) shall not apply if:

(A) the contractor is operating the National Laboratory for no profit or fee beyond expenses; and

(B) such contractor is offering the intellectual property for fair market value and any value or royalties the contractor derives from the intellectual property will be returned to the National Laboratory or the Federal Treasury in accordance with Section 202(c)(7)(E) of title 35, United States Code.

SEC. 210. MARCH-IN RIGHTS.

The Secretary may require the licensing to third parties of all intellectual property owned by the laboratory manager or operator that is subject to the provisions of this Act in the same manner as provided under section 203 of title 35, United States Code.

SEC. 211. OVERSIGHT.

The Secretary, the Inspector General of the Department of Energy, and the Comptroller General shall conduct periodic audits of activities of the National Laboratories under this title.

SEC. 212. REGULATIONS.

(a) Within 180 days after the date of the enactment of this title, the Secretary shall prescribe regulations for implementing Sections 205, 207 and 209. In prescribing regulations under this section the Secretary shall provide opportunity for public comment on proposed regulations.

(b) Any regulations under this section shall be guided by the purpose of this title.

(c) Before the Secretary issues regulations under this section, the Office of Federal Procurement Policy shall review such regulations for consistency with this title.

SEC. 213. EFFECTIVE DATE.

This title shall take effect on the date of enactment. The Secretary shall immediately enter into negotiations with the contractors of the National Laboratories to amend all existing contracts for the operation of the National Laboratories, to reflect this title. Pending such amendment, the provisions of this title shall govern the disposition of all intellectual property rights covering laboratory-owned inventions, technical data, and computer software, generated in performance of Department of Energy contracts for the operation of the National Laboratories.

PURPOSE OF THE MEASURE

The purpose of S. 1480, as ordered reported, is to—

provide national organization and coordination in the research, development and commercialization of high-temperature superconductors; and

to ensure the full use of the results of investment in the research and development carried out by the national laboratories of the Department of Energy in meeting international competition.

Background and Need

BACKGROUND—TITLE I

Superconductivity is a property that certain materials have to exhibit zero resistance to the flow of electric current. Recently discovered high temperature superconductive materials (superconducting above the boiling temperature of liquid nitrogen) could lead to vast improvements in electrical energy generation, storage, and transmission; transportation; electronics; electronic computation; electric power production from fusion and magnetohydrodynamics; and medicine.

Exciting advances are being made in the discovery of materials that exhibit superconductive properties at high temperatures. This research, which is already the basis of substantive private investment in electronic and medicine applications, has seen greater advances in the last two years than has been obtained in the past 75 years. The recent discoveries will permit cost reductions to be made in many of the existing superconducting technology applications.

The Department of Energy has been a major participant in high-temperature superconductor research. Several DOE laboratories have strong foundations in superconductivity, based upon years of work on magnets for high-energy physics research and on electric power transmission.

NEED FOR TITLE I

Much needs to be done to assure that U.S. industry can capitalize upon the research being undertaken at Department of Energy national laboratories and by other Federal agencies. The Federal government must improve coordination of its research efforts and in particular, the transfer of this new technology into products. A committed effort by other nations to develop and commercialize high-temperature superconductors, most notably Japan, is already well underway.

The Department of Energy national laboratories are well suited to lead a national effort in research and development in high-temperature superconductivity, but these laboratories lack experience in translating research and development into useful, commercial applications. This Committee heard testimony to this effect from John Alic of the Office of Technology Assessment, who was the key author of a June, 1988 OTA report on "Commercializing High Temperature Superconductivity." Alic noted:

> DOE's laboratories do not, however, have much of a track record in helping industry commercialize new technologies. The task, as S. 1480 recognizes, is to utilize their resources more effectively. If cooperative arrangements and rapid technology transfers to industry are to flourish, the laboratories will have to change in style and culture.

Title I is intended to focus and coordinate the national effort in high-temperature superconductor research and development at the DOE national laboratories. Title I requires the Secretary of Energy to carry out a cooperative research initiative in high-temperature superconductivity, bringing the national laboratories together with

universities and private domestic firms to develop the critical enabling technologies for high-temperature superconductivity.

BACKGROUND—TITLE II

In 1987 the U.S. government provided just over $50 billion for research and development, and private sources provided just under $50 billion. Approximately 35 percent of government-sponsored research and development is carried out in government laboratories.

The composition of the government's R&D effort has changed significantly since 1980. In 1980, 50 percent of government R&D went to defense programs. In 1987 the estimated share of government R&D for defense increased to 69 percent. This increase in defense R&D brought the R&D intensity of U.S. spending (the ratio of R&D expenditures to gross national product) back from a low of 2.1 percent in 1977 to near the 2.9 percent figure that had prevailed in the mid 1960's. The U.S. R&D intensity is now quite similar to that of Japan and West Germany, although the non-defense contribution to R&D in those countries is significantly above the share of non-defense research in the United States.

The Federal contribution to research and development is a major investment by the taxpayer. This investment has brought returns in varying degrees that appear to depend critically on the management of the technology transfer function of the research and development process. The increase in the portion of Federal research and development taking place within the national defense complex has brought new importance to the management of technology transfer from laboratories that conduct defense research and development.

Over the years, government-sponsored R&D has produced technology with important applications not necessarily related to the original mission of the research. Civilian applications of NASA space technology are perhaps the best known. However, the Department of Energy's civilian and defense R&D programs have also generated significant contributions to the domestic economy through the transfer of DOE-developed technology.

Prior to 1980 there was relatively little effort made to maximize the applications of federally funded research and development at the Department of Energy national laboratories. Encouraging the transfer to private use of technology developed in these laboratories was regarded as an activity subordinate to, and perhaps also detrimental to, the missions assigned the laboratories by Congress. This attitude was particularly strong in the Department of Energy laboratories assigned to defense missions.

However, in recent years concern has grown about the U.S. trade deficit and the ability of U.S. businesses to compete in world markets. In response to these concerns, the Administration and the Congress have acted to strengthen the links between the nation's research and technology base at the Department of Energy national laboratories and the competitiveness of U.S. industry. It has become evident that better management of technology transfer at these laboratories has the potential to enhance this competitiveness.

In attempting to improve the process of technology transfer, Congress has acted to decentralize management responsibilities for technology to allow the important decisions to be made by people as close as possible to where the technology is being developed. The Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96–480) and the Patent and Trademark Amendments of 1980, the Bayh-Dole Act (P.L. 96–517), are examples of actions that enable Federal laboratories to more effectively transfer technology to U.S. businesses by allowing industry to engage in cooperative research and development agreements with the laboratories and to obtain licenses to inventions made at the laboratories.

However, despite the changes that have been made in the relationship between Federal laboratories and the private sector, the current situation is far from optimal for effective technology transfer at all government laboratories. Under current law one set of rules applies to government-owned and -operated laboratories; another set applies to some government-owned contractor-operated laboratories; and, a third set of rules applies to other government-owned, contractor-operated laboratories.

The Stevenson-Wydler Act took a first step to improve the utilization of federally funded technology by directing each government-operated laboratory to establish an office of research and technology applications to disseminate information about products, processes, and services developed at the laboratory.

Before 1980 the government had the option to retain title to rights to all inventions resulting from federally funded research and development, although these rights could be waived under certain conditions. The Patent and Trademark Amendments of 1980 (Bayh-Dole) encouraged the licensing of inventions made at government-operated and contractor-operated laboratories by authorizing Federal agencies to grant exclusive and partially exclusive licenses if the agency determines that it is appropriate and in the public interest. In all cases, the Federal government retained a royalty-free license to use for government purposes. The laboratories covered were those operated by non-profit corporations, universities or small businesses so long as the laboratory did not have a nuclear weapons or naval nuclear propulsion mission.

The Federal Technology Transfer Act of 1986 (P.L. 99–502) amended Stevenson-Wydler Act to authorize Federal agencies to permit their government-operated laboratories to collaborate on research and development with businesses through cooperative research and development agreements. The intent of the Act is to make entering into these agreements as easy as possible from the point of view of the private industry involved, while protecting the legitimate concerns of the government.

In April, 1987, the President issued Executive Order 12591, "Facilitating Access to Science and Technology". The order implements the Federal Technology Transfer Act by directing the government-operated federal laboratories to enter into cooperative research and development agreements and to license, assign or waive rights to intellectual property. The concept of intellectual property includes inventions and computer software that a laboratory develops.

The cumulative result of these four actions is that the rules are different for each Department of Energy National Laboratory.

Department of Energy's research laboratories operated by universities, such as Argonne National Laboratory or Brookhaven National Laboratory, are authorized to elect to retain title to almost all inventions that they make.

Department of Energy's research laboratories operated by large businesses, including Oak Ridge National Laboratory and Idaho National Engineering Laboratory, are not covered by the statutes discussed above. Furthermore, it is unclear whether these laboratories are covered by the President's executive order.

Department of Energy's contractor-operated laboratories that are primarily dedicated to naval nuclear propulsion or weapons related research (including Sandia National Laboratories, Lawrence Livermore National Laboratory, and Los Alamos National Laboratory) are specifically precluded from taking title to inventions that they make without obtaining Department of Energy approval through a case-by-case application for a waiver. This process takes anywhere from three to 52 months and represents a significant uncertainty that inhibits technology transfer from these laboratories.

Nevertheless progress is being made to make Department of Energy national laboratories "user friendly" to U.S. industry. This legislation would advance that progress by extending the provisions of Bayh-Dole Act to all Department of Energy national laboratories (except for nuclear propulsion laboratories). The legislation undertakes to balance the need for national security with the need to facilitate commercialization opportunities from research being conducted at the national laboratories. The legislation also streamlines the process under which private industry can participate in cooperative research at the national laboratories.

NEED FOR TITLE II

More scientific breakthroughs occur and more patents are issued in the United States than anywhere else in the world.

This success at technology transfer occurs to very great extent outside one of our nation's most valuable, yet least well known, scientific resources—the Department of Energy's national laboratories. In recent years we have witnessed other countries, such as Japan, put to quick commercial use knowledge and technologies first developed at our national laboratories.

Department of Energy national laboratories appears to have two related problems in managing technology transfer. First, there is a difficulty in attracting industries and universities to take advantage of the scientific expertise of the national laboratories. Second, the red tape and delays private companies face when doing business with the national laboratories impose significant disincentives on use of this scientific expertise even if it is properly appreciated.

Both of these problems have roots in the history of the labs themselves. The Department of Energy defense laboratories in particular have tended to discourage technology transfer due to the national security implications of much of their work. These labora-

tories have a long history of secrecy and exclusion. For these laboratories, technology transfer is not thought of as a significant part of the laboratory mission. This attitude has kept the defense laboratories quite isolated from private industry.

The difficulties in improving relationships with private industry are compounded by the way technology is managed at the Department of Energy. The key to technology management is the assignment of rights to ownership of inventions and intellectual property. In most federally supported laboratories, such as the National Institute of Health and laboratories supported by the Department of Defense, ownership rights to inventions and intellectual property are assigned to the laboratory responsible for the innovation.

Such a system maximizes the technology transfer potential of an innovation and its potential for eventual economic success since the laboratory and the scientists most familiar with the capabilities, shortfalls, and possibilities of the innovation are directly responsible for negotiating the terms under which it commercialized.

Such decentralized technology management is particularly important for innovations created by laboratories working cooperatively with private businesses. Often the commercial viability of a technological innovation is very sensitive to timing. Laboratories need to negotiate contracts with private industry quickly if effective technology transfer is to be accomplished.

Much of the technology developed at the Department of Energy national laboratories is centrally controlled by DOE. While certain non-defense laboratories are permitted to elect title to some innovations, inventions and intellectual property created at defense-oriented laboratories are automatically retained by DOE.

There is much room for improvement within the DOE laboratory system. The DOE's Energy Research Advisory Board (ERAB) has issued several studies on what is needed to enhance the laboratory-industry relationship. Among the key recommendations made in ERAB reports in 1982, 1985, and, most recently, in 1988, are the following:

DOE should allow the laboratories to do more reimbursable work with industry; give the laboratories more flexibility to enter into cooperative agreements; decentralize DOE rules on commercial protection; and encourage personnel exchanges with industrial firms.

There is need for clarifications as to the importance of technology transfer as an inherent and high priority component of all the DOE programs.

Handling of proprietary matters needs to be simplified so as not to intimidate or frustrate laboratory or industrial researchers and thus impede collaborations and transfers between government and industry.

The laboratories need to be able to arrange for contracts and other forms of agreements with industry without cumbersome DOE authorization processes.

Cooperative research programs focused on an industrial sector are an effective method of improving relations with U.S. industry in order to address the interface barrier, and industry guidance should be used early in the planning stages of these activities.

Laboratory scientists rarely visit industrial laboratories; an opportunity for people-to-people transfer is essential.

While technology transfer can and should be increased to fulfill the potential of the laboratories, the scientific and defense contributions and the quality of the laboratories must be maintained.

Laboratories should create joint research programs with industry.

Intellectual property procedures must be continuously improved and greater delegation of authority provided to laboratory management.

A March 1988 GAO report cited the major constraints to technology transfer by the federal laboratories. These included:

public dissemination of computer software, creating disincentives for marketing such products;

lack of proprietary research capability, making business less inclined to enter into collaborative research and development agreements;

uncertainty and delay in gaining title to inventions at DOE laboratories due to the waiver request process; and

unnecessarily complex approval procedures.

This legislation undertakes to correct each of these identified deficiencies.

Legislative History

Senator Domenici introduced S. 1480 on July 10, 1987. Subsequently, Senators Wilson and Murkowski were added as cosponsors of the bill. On July 10, Senator Domenici also introduced amendments numbered 481 to 486 to S. 1480.

In the 99th Congress, the Subcommittee on Energy Research and Development held a joint hearing with the Committee on Science and Technology of the House of Representatives on one of the issues addressed by S. 1480, technology transfer from the national laboratories of the Department of Energy (Hrng. No. 161).

On August 31, 1987, the Subcommittee on Energy Research and Development held a workshop on human gene mapping, one of the issues addressed by S. 1480 as introduced (S. Rpt. 100–71). The Subcommittee held hearings on S. 1480 on September 15 and 17, 1987.

On March 4, 1988, Senator Domenici, for himself and Senators McClure and Bingaman, introduced an amendment, No. 1627, in the nature of a substitute to S. 1480.

At its business meeting on August 11, 1988, the Committee on Energy and Natural Resources considered S. 1480, adopted a modified version of amendment No. 1627 as a substitute, approved two amendments to the substitute, and ordered the resulting bill favorably reported to the Senate.

Committee Recommendation and Tabulation of Votes

The Committee on Energy and Natural Resources, in open business session on August 11, 1988 by unanimous voice vote of a quorum present, recommends that the Senate pass S. 1480, if amended as described herein.

COMMITTEE AMENDMENT

During consideration of S. 1480, the Committee adopted an amendment in the nature of a substitute to the bill and two amendments to the substitute. The Committee then ordered the substitute, as amended, favorably reported to the Senate. The principal changes in S. 1480 as introduced are described below. Additional details on the provisions of the bill as ordered reported are contained in the Section-By-Section Analysis portion of this report.

1. Amendment in the nature of a substitute

The amendment in the nature of a substitute adopted by the Committee was a modified version of amendment No. 1627, introduced by Senator Domenici on March 4, 1988. The substitute consisted of two titles, instead of the four titles of S. 1480 as introduced. The titles dropped addressed semiconductor research (similar to legislation enacted into law in the 1st Session of the 100th Congress in the Department of Defense Authorization bill, Public Law 100–180) and research in mapping the human genome (similar to legislation, S. 1966, that passed the Senate on June 17, 1988).

The substitute retained a title coordinating research by the Department of Energy in high-temperature superconductivity and a title addressing the commercialization of technology developed at the Department's national laboratories.

2. Technology transfer as a mission of the Department of Energy national laboratories

The Committee adopted an amendment to the substitute making it clear that one of the missions of the Department of Energy national laboratories is the commercialization of technology developed in connection with activities of these laboratories authorized by title I of the bill as ordered reported and by other law.

3. Restrictions on access to data and information

The Committee amended the substitute to remove any authority of the Secretary to go beyond existing law in restricting access to data and information in possession of the Secretary or the national laboratories.

SECTION-BY-SECTION ANALYSIS

Section 1 provides the short title of the bill, the "Department of Energy National Laboratory Cooperative Research Initiatives Act".

Section 2 contains the definitions of the terms used in the Act as a whole, including a listing of the national laboratories of the Department of Energy that are subject to the bill. Section 2 specifically provides that the Naval Nuclear Propulsion Laboratories, and their contractors or subcontractors performing work covered by Executive Order 12344, are not subject to the bill.

Section 3 provides that it is a mission of the Department of Energy national laboratories to foster, consistent with the national security and a fair return on the taxpayers' investment in these laboratories, the commercialization of technology developed in connection with other missions of the laboratories. This section also directs the Secretary of Energy to take those actions that he finds

appropriate and consistent with law to further the mission of the commercialization of such technology.

TITLE I—THE DEPARTMENT OF ENERGY NATIONAL LABORATORIES CENTERS FOR RESEARCH ON ENABLING TECHNOLOGIES FOR HIGH-TEMPERATURE SUPERCONDUCTIVITY

Section 101 contains the findings for title I.

Section 102 contains the purposes for title I.

Section 103 requires the Secretary of Energy to carry out a "Superconductor Research Initiative" on enabling technology for high-temperature superconductivity and on practical applications of high-temperature superconductor technology.

Section 104 provides for participation in the Initiative by the national laboratories of the Department of Energy.

Subsection (a) requires the Secretary of Energy to ensure participation of the national laboratories in the Initiative to the extent that such participation does not detract from the primary mission of any participating laboratory.

Subsection (b) directs the Secretary to enter into such agreements as may be necessary to provide for participation of the national laboratories in the Initiative.

Subsection (c) requires that the Initiative include provisions for one or more national laboratories to conduct research and development activities on high-temperature superconductivity.

Section 105 sets forth the principal elements of the Initiative.

Subsection (a) requires the Secretary to form a "Council on Research on Enabling Technologies" to act as an advisory body to the Secretary in setting goals and strategies for the Initiative. The Council would also recommend guidelines for the release of technical findings and developments under the Initiative. The recommendations of the Council would be public. These guidelines must be consistent with any guidelines for release of such information set forth by federal agencies affected by the guidelines.

Subsection (b) requires the Secretary to establish cooperative research centers in enabling technology for high-temperature superconducting materials and applications at one or more national laboratories with appropriate university and private industry participants. These centers would be located at national laboratories that demonstrate expertise in high-temperature superconductivity research and research in associated technologies.

Subsection (c) requires the Council to recommend measures to ensure that unnecessarily duplicative research or activities are not being carried out at the cooperative research centers.

Section 106 authorizes the Initiative to include provisions for the temporary exchange of personnel between domestic firms or universities participating in the Initiative and a participating national laboratory, subject to any restrictions, limitations, terms, and conditions as the Secretary considers necessary in the interests of national security.

Section 107 requires the Secretary to make available to participants to the Initiative any facilities, personnel, equipment, services, and other resources of the Department for the purpose of conducting research and development projects under the Initiative.

The Secretary may make facilities available under the Initiative only to the extent that the cost of the use of such facilities is reimbursed by the user.

Section 108 authorizes the Secretary in preparing the research and development budget of the Department of Energy to include support for programs, projects, and activities that encourage the development of technology in high-temperature superconductivity.

Section 109 describes cost-sharing agreements under the Initiative.

Subsection (a) requires the Secretary to provide to the director of each national laboratory participating in the Initiative the authority to include a cost-sharing provision in any cooperative research and development agreement under the Initiative.

Subsection (b) provides that the director of any national laboratory participating in the Initiative my undertake work for others under the Initiative only when facilities of the laboratory are available and when such work would not interfere with other Department of Energy programs. Work for others under the Initiative must be conducted by the director so as to not create a future detrimental burden on the laboratory.

Subsection (c) provides that unless the Secretary approves in advance, no participating laboratory may receive more than 10 percent of that laboratory's annual budget in any year from non-appropriated funds derived from work for others under the Initiative. In addition, no such laboratory may receive in any year more than $10 million in non-appropriated funds under any cooperative research and development agreement under the Initiative except as provided by authority delegated by the Secretary and except to the extent approved in advance by the Secretary. The provision requires the Secretary to delegate to the director of each national laboratory authority to receive in any year up to $10 million in non-appropriated funds under the Initiative.

Section 110 provides for oversight of agreements under the Initiative.

Subsection (a) authorizes the Secretary to review and modify or disapprove any cooperative research and development agreement under the Initiative. The Secretary may exercise this authority during a 30-day period after the submission of the agreement to the Secretary. The Secretary must explain in writing any disapproval or modification under this section.

Subsection (b) requires each national laboratory participating in the Initiative to maintain a record of all cooperative research and development agreements under the Initiative and to submit such record to the Secretary on an annual basis.

Section 111 requires the Secretary to ensure that unnecessarily duplicative research is not performed at research facilities of entities participating in the Initiative.

Section 112 specifies the treatment of agreements, associations, or consortia under the Initiative under the Internal Revenue Code.

Subsection (a) provides that any such cooperative agreement, association or consortium established by the Department of Energy under the Initiative will be treated as a nonprofit organization under section 501(c)(3) of the Internal Revenue Code and shall be

exempt from tax under section 501(a) of such Code with respect to activities under the Initiative.

Subsection (b) provides that any amounts transferred under the Initiative to participants in any cooperative agreement, any association, or consortium under the Initiative shall be treated as basic research payments for purposes of section 41(a)(2) of the Internal Revenue Code.

Subsection (c) provides that no gain or loss for tax purposes will be recognized in connection with the transfer under the Initiative of any patent, copyright, trademark, trade secret, mask work, or other intellectual property by or between participants in a cooperative agreement, an association, or consortium under the Initiative or any participating member of such association or consortium. The basis for tax purposes of any property transferred would not change.

Section 113 provides the same limited antitrust defenses available to a joint research and development venture under the National Cooperative Research Act of 1984 for participants in a cooperative agreement or for an association or consortium established by the Secretary of Energy or the national laboratories under the Initiative.

TITLE II—TECHNOLOGY MANAGEMENT AT THE DEPARTMENT OF ENERGY NATIONAL LABORATORIES

Section 201 contains the findings and purpose for title II of the bill.

Section 202 requires the Secretary of Energy to carry out two reviews and to implement policies based on one of these reviews.

Subsection (a) requires the Secretary to review regulations, policies, procedures, and administrative processes affecting the ability of DOE national laboratory directors to carry out cooperative research with private industry or with universities.

Subsection (b) requires the Secretary to review the impact of the exchange of scientific information, scientific innovation, and commercialization resulting from cooperative research and development agreements and to conduct a survey of non-Federal parties to determine if adequate measures exist to encourage scientific innovation and commercialization resulting from these agreements. Policy recommendations that are based on this study would be submitted to Congress.

Subsection (c) directs the Secretary to develop guidelines based on the review under subsection (a). Subsection (c) also requires the Secretary to report to Congress and the President within 90 days after the enactment of the Act on the review under subsection (a) and requires the Secretary to implement the guidelines relating to the review under subsection (a) within 180 days after such enactment.

This section limits the requirement to implement guidelines to those matters described in subsection (a). The section does not apply to the exchange of scientific information or access to such information, which are topics that may be addressed in the study under subsection (b). With regard to the study under subsection (b), existing law continues to govern the authority and the responsibil-

ity of the Secretary with respect to access to information. This section of the Act merely authorizes the Secretary to make recommendations to Congress on the issue of access to information.

Section 203 establishes as Congressional policy that intellectual property rights in technology developed at Department of Energy national laboratories be managed so as to promote the competitiveness of United States industries and directs the Secretary of Energy to promulgate policy guidelines for management of cooperative research and development agreements and intellectual property rights arising under such agreements. Under this policy, directors of the national laboratories would devise implementing procedures consistent with the Secretary's guidelines.

Section 204 contains definitions of the terms used in title II. The Committee did not include a definition of "commercially valuable technical data" so as to avoid any suggestion that, by enactment of this title, the Secretary would acquire new authority or be subject to new requirements with respect to the release of technical data. Title II does not change exiting law in this regard. Because the concept of a "trade secret" can also encompass technical data, this term was removed from the definition of "intellectual property".

Section 205 describes the relationship between the Secretary of Energy and the directors of the national laboratories in carrying out cooperative research with the private sector, the universities and others and in commercializing the resulting technology.

Subsection (a) requires the Secretary to prescribe regulations to ensure that contracts for operation of a national laboratory authorizes the director to enter into cooperative research and development agreements and to negotiate intellectual property licensing agreements for inventions, technical data, or computer software owned, assigned, or licensed to the laboratory.

Subsection (b) authorizes a director of a national laboratory to include provisions in any cooperative research and development agreement permitting the laboratory manager or operator to accept funds, personnel, services, and property from collaborating parties, to grant or agree to grant in advance to a collaborating party intellectual property rights, and, to the extent consistent with Department of Energy conflict-of-interest policies, allow an employee of a laboratory manager or operator to participate in efforts to transfer intellectual property rights developed by the employee while in the service of the manager or operator. The liabilities of the parties to any cooperative research and development agreement would be specified in the agreement by the affected parties.

Subsection (c) requires the director of a national laboratory before entering into a cooperative research and development agreement to determine that facilities of the laboratory are available for work under the agreement, that the work would not interfere with Department of Energy programs and would not create a future detrimental burden on the laboratory, and that the proposed agreement is consistent with the applicable guidelines of the Secretary for such agreements.

Subsection (d) authorizes the Secretary of Energy to disapprove or require modification of any agreement under subsection (a) within a 30-day period beginning on the date the agreement is pre-

sented to the Secretary by the director of the laboratory concerned. If no action is taken in the 30-day period, the agreement is deemed approved. The Secretary must explain in writing his reasons for any disapproval or required modification.

Subsection (e) limits the cumulative total of non-appropriated funds received in any fiscal year under all agreements entered into by any director of a national laboratory under this title to 10 percent of the annual budget of the laboratory for such year. Included in this limit are any non-appropriated funds received in connection with the high-temperature superconductivity Initiative established under title I.

Subsection (f) requires each national laboratory to maintain a record of all agreements entered into under this title and to submit the record to the Secretary annually.

Section 206 contains further provisions governing cooperative agreements involving the national laboratories.

The section contains criteria to be used by a laboratory director in deciding to enter into cooperative agreements. The director must give special consideration to small business firms and consortia involving small business firms and preference to businesses located in the United States that agree that products resulting from the collaboration will be developed and manufactured substantially in the United States. The director must also, in the case of persons subject to foreign control, take into consideration whether the foreign government in question permits persons from the United States to enter into cooperative research and development and licensing agreements. Finally, the director must provide opportunity for university participation in cooperative agreements when such participation will contribute to the purpose of this title.

Section 207 contains provisions governing patents on inventions developed at national laboratories.

Subsection (a) requires the Secretary of Energy to dispose of the title to any invention made under a contract with a national laboratory in the same manner as if the applicant were a small business or a nonprofit organization under Chapter 18 of title 35, United States Code.

Subsection (b) provides that whenever the Secretary determines to retain title to an invention made at a national laboratory under an agreement under this title because of exceptional circumstances under section 202(a)(ii) of title 35, United States Code or because the invention is made under a funding agreement described in section 202(a)(iv) of title 35, title to the invention shall be retained by the Government unless the national laboratory in question requests the title. If the national laboratory requests the title and the Secretary does not notify the director of the laboratory within 90 days after receipt of the request that the invention is covered by sections 202(a) (ii) or (iv) or has been designated sensitive technical information, the title would remain with the laboratory.

Inventions that arise outside the scope of an agreement under this title would remain with the Government unless the laboratory made an application for and received a waiver under existing law.

Subsection (b) prohibits the Secretary from retaining title to such an invention under the exception of section 202(a)(iv) of title 35,

United States Code, without first determining that the invention has been classified or designated sensitive technical information.

This subsection also provides that the Secretary may not use export control statutes as the sole basis for refusing to request title to an invention first conceived and reduced to practice under a contract with a national laboratory.

Section 208 authorizes the waiver or omission of any of the rights of the federal government or the obligations of a national laboratory described in chapter 18 of title 35, United States Code, if the Secretary determines that the interests of the United States and the general public will be better promoted by the waiver or omission. The waiver or omission would be considered by the Secretary in three circumstances: if necessary to obtain a unique or highly qualified contractor; if the subject invention results from cost shared research, and the contractor involved is making a substantial contribution to the work, or if the invention will require substantial additional investment in development before a product is created, and the primary market for the product is expected to be the United States.

Section 209 contains provisions governing contracts between the Department of Energy and national laboratories.

Subsection (a) requires any funding agreement with a national laboratory to contain provisions as follows:

To restrict the use of any royalties or income earned by the manager or operator of a national laboratory to uses authorized under existing law;

To provide that the costs of obtaining and protecting intellectual property rights owned by the laboratory be paid for by the laboratory;

To provide that the national laboratory take responsibility for management of intellectual property rights created at such laboratory; and

To prohibit the manager or operator of a national laboratory from receiving money or other benefit from the use or licensing of such property for the benefit of such manager or operator.

This last prohibition would not apply to research and development associated with activities of the laboratory, to the promotion of technology transfer as authorized by law, or in special circumstances approved by the Department of Energy manager of the Operations Office supervising the laboratory.

Subsection (b) requires the manager or operator of a national laboratory to pay compensation to the United States based on the value of intellectual property rights retained by the laboratory. The amount of payment would be set by arbitration as set forth in the subsection. Compensation would not be required if the contractor operating the laboratory receives no profit or fee beyond expenses and is offering the intellectual property for fair market value with any value or royalties received to be returned to the laboratory or to the United States.

Section 210 authorizes the Secretary to require licensing in accordance with existing law to third parties of all intellectual property subject to this title and owned by the manager or operator of a national laboratory.

Section 211 provides for oversight of the activities of national laboratories under this title.

Section 212 provides for regulations for implementation of sections 205, 207, and 209 of the title. The Committee does not intend that any delay in prescribing regulations delay the effectiveness of provisions of this title. The Department of Energy has the responsibility to manage its laboratories and to ensure effective conduct of their mission work when applying the directions set forth in this legislation. Therefore the Department has the sole authority and responsibility in drafting and implementing regulations under this title.

Section 213 provides that the title take effect of the date of its enactment. The Secretary of Energy must enter into negotiations with the contractor at each national laboratory subject to the title to amend all existing contracts for operation of the laboratory to reflect the provisions of the title. Pending amendment of these contracts, the provisions of the title govern the disposition of all intellectual property rights generated in performance of the contracts.

Cost and Budgetary Considerations

The following estimate of the cost of this measure has been provided by the Congressional Budget Office:

U.S. Congress,
Congressional Budget Office,
Washington, DC, September 9, 1988.

Hon. J. Bennett Johnston, Jr.,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has reviewed S. 1480, the Department of Energy National Laboratory Cooperative Research Act of 1988, as ordered reported by the Senate Committee on Energy and Natural Resources, August 11, 1988.

Based on information provided by the Department of Energy (DOE), CBO estimates that enacting S. 1480 would have no significant effect on federal spending, and no effect on the budgets of state or local governments. We cannot estimate what effect, if any, the bill would have on federal revenues.

Title I of S. 1480 would establish programs within DOE to promote research on high-temperature superconductors. These activities would include developing a Superconductivity Research Initiative. Title II would require the DOE to develop regulations that give the national laboratories the authority to enter cooperative research agreements with private sector entities. These cooperative agreements would be intended to encourage the transfer of technology from the national laboratories to private industry. CBO does not expect the activities required by either title to result in any significant cost to the federal government, because DOE is currently undertaking similar activities.

In addition, S. 1480 would provide a tax exemption for any organization engaged in or any income derived from research under the cooperative agreements authorized by the bill. CBO does not have sufficient information to estimate the impact of this provision of federal tax receipts.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Michael Sieverts, who can be reached at 226–2860.

Sincerely,

JAMES L. BLUM,
Acting Director.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact that would be incurred in carrying out S. 1554.

The bill is not a regulatory measure in the sense of imposing government-established standards or significant economic responsibilities on private individuals or businesses. The bill directs the Secretary of energy to carry out a research and development initiative in high-temperature superconductivity. In addition, under title II of the bill, the relationship between the Secretary of Energy and the contractors operating the Department of Energy national laboratories would be modified in the interest of improving the transfer of technology developed at these laboratories. Any involvement of private firms and individuals in these research programs is voluntary.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy from the bill.

Little, if any, additional paperwork would result from the enactment of S. 1480.

EXECUTIVE COMMUNICATIONS

On August 20, 1987, the Committee requested reports on S. 1480 from the Departments of Agriculture, Defense, and Energy and from the National Aeronautics and Space Administration, the National Institutes of Health, the National Science Foundation, the Office of Science and Technology Policy, and the Office of Management and Budget. On September 9, 1987, the Committee requested a report on the bill from the Department of Commerce.

The pertinent reports and communications received by the Committee setting forth Executive agency recommendations relating to S. 1480 are set forth below.

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION,
Washington, DC, October 16, 1987.

Hon. H. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: This letter is in further response to your request for the views of the National Aeronautics and Space Administration on the bill S. 1480, the "Department of Energy National Laboratory Cooperative Research Initiatives Act."

Title I of the bill would emphasize continued research on enabling technologies for high temperature superconducting applications, encourage private industry, university, and Department of

Energy National Laboratory interaction through Centers for Research on Enabling Technologies at the National Laboratories, and provide national organization and coordination under the auspices of the Department of Energy. In pursuit of this goal, the Secretary of Energy would be directed to form a council to be known as the "Council for Research on Enabling Technologies," composed of representatives of appropriate government agencies, universities, and industry, to provide guidance in setting goals and strategies for this research.

NASA is concerned that the bill may be construed to prevent other agencies from performing research on superconductivity which might result in applications consistent with their functions. Specifically, we believe that NASA should continue to pursue research leading to potential applications of superconductivity in the civil space program and that any initiative such as this be clearly established as in addition to, not exclusive of, other agencies' programs.

Title III of the bill would establish a Semiconductor Technology Manufacturing Excellence Initiative and direct the Secretary of Defense to initiate and carry out a cooperative program of research on semiconductor manufacturing technology and on the practical applications of such technology with the Department of Energy and other appropriate government agencies, as well as private sector consortia. The initiative also provides that the semiconductor technology developed as a result of the research and development activities under this program is for the exclusive use of the United States semiconductor industry.

While this initiative appears to be limited to the production aspects of the semiconductor industry, we are concerned that it may be misinterpreted or expanded to apply to the basic research in the NASA microgravity program or joint industry/academic research conducted through the Centers for Commercial Development of Space. In particular, the microgravity program is a new area with participants from many disciplines and many countries. Rapid progress in the field is characterized by the synergism resulting from the international cooperative efforts that include, among others, joint experimental work and publications. To require that all results in the NASA microgravity program be available only to the U.S. semiconductor industry would effectively stifle our researchers and results in unnecessarily duplicative research.

NASA defers to the Department of Energy and Department of Defense for further comments on the specifics of the legislation and the need for its enactment.

However, in general, NASA believes that the intent of S. 1480 is met by the President's Executive Order on Facilitating Access to Science and Technology. The broad agency initiatives in response to the Executive Order that you have heard about in recent testimonies will significantly enhance collaboration and cooperation between the national laboratories and the private sector. These efforts will continue to be assessed and coordinated by the various committees organized under the Office of Science and Technology Policy and the Economic Policy Council. In addition, periodic reviews for scientific direction and merit will be chartered from orga-

nizations like the National Academies of Science and Engineering and the committees of the National Research Council.

In this context, the proposal to create a special commission to review the field and plan for the future is simply unnecessary, and could waste time and expertise that is needed in the laboratories for this very rapidly changing field of research. Instead, these existing mechanisms should be used to efficiently and effectively advance the research and development of the recent breakthroughs in superconductivity.

The Office of Management and Budget has advised that from the standpoint of the Administration's program, there is no objection to the submission of this report to the Congress.

Sincerely,

LYNN W. HENINGER
(For Jon A. McBride, Assistant Administrator for Congressional Relations).

GENERAL COUNSEL OF THE
DEPARTMENT OF DEFENSE,
Washington, DC, December 31, 1987.

Hon. J. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: This is in response to your request for the views of the Department of Defense on S. 1480, 100th Congress, a bill to improve the integration of universities and private industry into the National Laboratory system of the Department of Energy in order to speed the development of technology in areas of significant economic potential.

In general, DoD believes that the intent of S. 1480 is met by the President's Executive Order on Facilitating Access to Science and Technology. The broad agency initiatives in response to the Executive Order that you have heard about in recent testimonies will significantly enhance collaboration and cooperation between the national laboratories and the private sector. These efforts will continue to be assessed and coordinated by the various committees organized under the Office of Science and Technology Policy and the Economic Policy Council. In addition, periodic reviews for scientific direction and merit will be chartered from organizations like the National Academies of Science and Engineering and the committees of the National Research Council.

In this context, the proposal to create a special commission to review the field and plan for the future is simply unnecessary, and could waste time and expertise that is needed in the laboratories for this very rapid changing field of research. Instead, let's use these existing mechanisms to efficiently and effectively advance the research and development in all of the technical areas mentioned in S. 1480.

The Office of Management and Budget advises that from the standpoint of the Administration's program, there is no objection

to the presentation of this report for the consideration of the Committee.

Sincerely,

KATHLEEN A. BUCK.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of Rule XXVI of the Standing Rules of the Senate, the Committee notes that no changes in existing law are made by the bill S. 1480, as ordered reported.

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